

CLAIM:

1 1. A method of sending messages, the method comprising:
2 determining that an outbound message stored in a buffer has been
3 unsuccessfully sent to a receiving agent more than a threshold number of times;
4 sending the receiving agent outbound messages currently stored in the
5 buffer; and
6 determining that all of said outbound messages have been successfully
7 sent before any other outbound messages are sent to the receiving agent.

1 2. The method of claim 1, wherein an outbound message is successfully sent if a
2 success confirmation message is received for the outbound message from the
3 receiving agent, and wherein an outbound message is unsuccessfully sent if a retry
4 response is received for the outbound message from the receiving agent.

1 3. The method of claim 2, wherein a retry response is received from the receiving
2 agent for an outbound message if a buffer in the receiving agent that stores
3 incoming messages does not have room for the outbound message.

1 4. The method of claim 1, wherein after receiving a successfully sent outbound
2 message the receiving agent:
3 identifies a second node in the multi-node system that is capable of
4 processing the successfully sent outbound message; and
5 sends the successfully sent outbound message to the second node.

1 5. The method of claim 1, wherein the outbound message is sent in a packet format.

6. A method of sending messages in a multi-node system, the method comprising:
receiving a retry response for an outbound message that is stored in an
outbound buffer in a first node of a multi-node system;
determining that a threshold number of retry responses have been received
for the outbound message; and
preventing any new entries from being stored in the outbound buffer until
all outbound messages currently stored in the outbound buffer have been both sent
to a receiving agent and stored in an inbound buffer in the receiving agent.

7. The method of claim 6, wherein a retry response is received for the outbound
message if the outbound message was sent to the receiving agent and there were
no free locations in the inbound buffer in which to store the outbound message.

8. The method of claim 6, wherein said determining that a threshold number of retry
responses have been received includes:
incrementing a retry counter associated with the outbound message; and
determining that the retry counter has reached a threshold.

9. The method of claim 6, wherein the outbound message is a memory related
outbound message.

10. The method of claim 9, wherein the outbound message relates to snooping a cache
memory that is part of a second node of the multi-node system.

1 11. A node controller comprising:
2 a buffer to store a plurality of outbound messages;
3 an output interface coupled to the buffer to send outbound messages from
4 the node controller;
5 an input interface to receive retry responses; and
6 a buffer manager coupled to the input interface and having logic to
7 determine that a threshold number of retry responses have been received for a
8 outbound message that is stored in the buffer.

1 12. The node controller of claim 11, wherein each outbound message in the buffer has
2 a retry counter, wherein the buffer manager has logic to increment the retry
3 counter for an outbound message each time that a retry response is received for
4 the outbound message, and wherein the buffer manager has logic to use the retry
5 counter to determine that a threshold number of retry responses have been
6 received.

1 13. The node controller of claim 11, wherein the buffer manager further comprises
2 logic to prevent any outbound messages not currently stored in buffer from being
3 sent until the successful sending of all outbound messages currently stored in the
4 buffer has been confirmed.

1 14. The node controller of claim 12, wherein said logic to prevent any outbound
2 messages from being sent includes logic to prevent the storage of new outbound
3 messages in the buffer.

15.

A system comprising:

a first node having a node controller that includes:

an outbound buffer to store a plurality of outbound messages; and

an outbound buffer manager to prevent the storage of new

outbound messages in the outbound buffer when a threshold number of retry

responses has been received for a outbound message stored in the outbound

buffer; and

a receiving agent coupled to said first node and including:

an inbound buffer to store a plurality of outbound messages; and

an inbound buffer manager to send a retry response to the first

node if an outbound message is received from the first node and there are no free

entries in the inbound buffer in which to store the outbound message.

16.

The system of claim 15, wherein each outbound message stored in the inbound

buffer has a retry counter, and wherein the inbound buffer manager contains logic

to increment the retry counter for an outbound message each time a retry response

is received for the outbound message.

17.

The system of claim 16, wherein the outbound buffer manager further contains

logic to prevent the storage of new outbound messages in the outbound buffer

when the retry counter for an outbound message has reached a threshold.

18.

The system of claim 15, wherein the first node further comprises a first processor

that sends outbound messages to the node controller.

1 19. The system of claim 15, wherein the system further comprises a second node, and
2 wherein the receiving agent further includes a routing manager to route outbound
3 messages from the first node to the second node.

1 20. An article of manufacture comprising a computer-readable medium having stored
2 thereon instructions adapted to be executed by a processor, the instructions which,
3 when executed, cause the processor to manage outbound message sending by:
4 sending to a receiving agent an outbound message that is stored in an
5 outbound buffer in a node of a multi-node system;
6 receiving a retry response for the outbound message sent;
7 determining that a threshold number of retry responses have been received
8 for the outbound message; and
9 preventing any new entries from being stored in the outbound buffer until
10 all outbound messages currently stored in the outbound buffer have been both sent
11 to the receiving agent and stored in an inbound buffer in the receiving agent.

1 21. The article of manufacture of claim 20, wherein the instructions for determining
2 that a threshold number of retry responses have been received includes
3 instructions to:
4 increment a retry counter associated with the outbound message; and
5 determine that the retry counter has reached a threshold.